

REMARKS

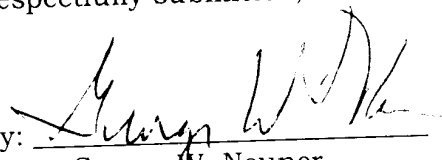
An early examination and notice of allowance are earnestly solicited.

Respectfully submitted,

Date:

18 Sept '01

By:



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Appendix showing details of the amendment

In the Specification:

Please amend the English translation of "Amended specification page 2" as follows.

Page 2, paragraph 4: please rewrite as follows:

A device characterized by an insulating device being planned that is designed in such a way that a heat flow in a radial direction vertical to the rotation axis (M) of the furnace (1) can be restricted to a preset rate and whereby the insulating device (6) is designed so that its insulating effect is reduced from the cover heater (3) to the floor heater (2) [in accordance with the characterization clause of Claim 1] is familiar from the Journal of Crystal Growth, NL, North-Holland Publishing Co. Amsterdam, Vol. 166, No. ¼, September 1, 1996, pages 566-571.

Page 2, paragraph 6: please rewrite as follows:

The task is solved by means of a device for producing a monocrystal by growing from a melt of raw materials of the monocrystal to be produced with a heating appliance (1) for generating a temperature gradient within the melt of raw material whereby the heating appliance (1) has a rotationally symmetrical furnace (1) with a rotation axis (M) and with an essentially level floor heater (2) and an essentially level cover heater (3) that can be controlled to different temperatures and characterized by an insulating device being planned that is designed in such a way that a heat flow in a radial direction vertical to the rotation axis (M) of the furnace (1) can be restricted to a preset

rate and whereby the insulating device (6) is designed so that its insulating effect is reduced from the cover heater (3) to the floor heater (2) [in accordance with Claim 1].

Page 2, paragraph 7: please rewrite as follows:

[Further developments are indicated in the subordinate claims.] In certain preferred embodiments of the invention, the device has a furnace designed cylindrically and a controller that is designed in such a way that the temperature of the floor heater (2) can be reduced in comparison with the temperature of the cover heater. In other preferred embodiments, the device has an insulator device (6) that is designed as a tapered cone body with a coaxial cylindrical hollow space that is open at the top and bottom and placed in the furnace (1) in such a way that the tapered end is towards the floor heater (2). Preferably, the insulator device is made, for example, of graphite. In other preferred embodiments, the device comprises a furnace (1) having a jacket heater (5). In still other preferred embodiments, the device comprises a heat transmission part (6) having a rotationally symmetrical profiled or unprofiled shape. In yet other preferred embodiments, the device includes a heating surface of the heaters being calculated in a ratio to the diameter of the monocrystal to be produced so that a temperature that is essentially homogeneous over the radial cross-section surface of the monocrystal to be produced can be generated together with a temperature gradient between the first heater (2) and the second heater (3) that is essentially homogeneous and constant. Preferably, the size of the surface of each heater (2, 3) is at least 1.5 times the cross-sectional area of the monocrystal to be produced is calculated. Preferably, the controller is designed so that the temperature

of the first level heater (2) can be lowered continuously as against the second level heater (3). In still other preferred embodiments, the clearance between the heaters is greater than the length of the monocrystal to be produced. In yet further preferred embodiments, a crucible (4) for receiving a melt of raw material of the monocrystal to be produced is provided between the first heater (2) and the second heater (3). Preferred devices of the present invention are particularly suited for the production of a monocrystal from a III-V composite semiconductor, for example, a monocrystal of gallium arsenide.

In the Claims:

Please cancel the amended claims 1-13 of the International application (PCT) and substitute the following new claims.

1. ~~Device for producing a monocrystal by growing from a melt of raw materials of the monocrystal to be produced with a heating appliance (1) for generating a temperature gradient within the melt of raw material whereby the heating appliance (1) has a rotationally symmetrical furnace (1) with a rotation axis (M) and with an essentially level floor heater (2) and an essentially level cover heater (3) that can be controlled to different temperatures and characterized by an insulating device being planned that is designed in such a way that a heat flow in a radial direction vertical to the rotation axis (M) of the furnace (1) can be restricted to a preset rate and whereby the insulating device (6) is designed so that its insulating effect is reduced from the cover heater (3) to the floor heater (2).~~

2. ~~Device in accordance with Claim 1, characterized by the furnace being designed cylindrically and by there being a controller that is designed in such a way that the temperature of the floor heater (2) can be reduced in comparison with the temperature of the cover heater.~~
3. ~~Device in accordance with Claim 1, or 2 characterized by an insulator device (6) that is designed as a tapered cone body with a coaxial cylindrical hollow space that is open at the top and bottom and placed in the furnace (1) in such a way that the tapered end is towards the floor heater (2).~~
4. ~~Device in accordance with one of the Claims 1 to 3 characterized by the furnace (1) having a jacket heater (5).~~
5. ~~Device in accordance with one of the Claims 1 to 4 characterized by the heat transmission part (6) having a rotationally symmetrical profiled or unprofiled shape.~~
6. ~~Device in accordance with one of the Claims 1 to 5 characterized by a heating surface of the heaters being calculated in a ratio to the diameter of the monocrystal to be produced so that a temperature that is essentially homogeneous over the radial cross-section surface of the monocrystal to be produced can be generated together with a temperature gradient between the first heater (2) and the second heater (3) that is essentially homogeneous and constant.~~
7. ~~A device in accordance with Claim 6, characterized by the size of the surface of each heater (2, 3) being at least 1.5 times the cross-sectional area of the monocrystal to be produced is calculated.~~

8. ~~A device in accordance with one of the Claims 2 to 7 characterized by the controller being designed so that the temperature of the first level heater (2) can be lowered continuously as against the second level heater (3).~~

9. ~~A device in accordance with one of Claims 1 to 8 characterized by the clearance between the heaters being greater than the length of the monocrystal to be produced.~~

10. ~~A device in accordance with Claims 1 to 9 characterized by the insulator device being made, for example, of graphite.~~

11. ~~A device in accordance with one of the Claims 1 to 10 characterized by a crucible (4) for receiving a melt of raw material of the monocrystal to be produced being provided that is located between the first heater (2) and the second heater (3).~~

12. ~~A device in accordance with one of the Claimd 1 to 11 characterized by the device being a device for producing a monocrystal from a III-V composite semiconductor.~~

13. ~~A device in accordance with one of the Claims 1 to 12 characterized by the device being a device for producing a monocrystal from gallium arsenide.~~

14. A device for producing a monocrystal by growing the monocrystal from a melt of raw materials with a heating appliance for generating a temperature gradient within the melt of raw material, wherein the heating appliance comprises a rotationally symmetrical furnace with a rotation axis (M) and with an essentially level floor heater and an essentially level cover heater that can be controlled to different temperatures, the device further comprising:

a first insulating device that is structured and arranged in such a way that a heat flow in a radial direction perpendicular to the rotation axis (M) of the furnace can be controlled at a preset rate; and

a second insulating device that is structured and arranged to provide an insulating effect having a gradient from the cover heater to the floor heater.

15. A device in accord with Claim 14, wherein the furnace is cylindrical and further comprising a controller to control a temperature of the floor heater to be lower than a temperature of the cover heater.

16. A device in accord with Claim 14, further comprising an insulator device having a tapered cone body with a coaxial cylindrical hollow space that is open at the top and bottom, the insulator device being positioned in the furnace so that the tapered end is towards the floor heater.

17. A device in accord with Claim 14, further comprising a jacket heater for the furnace.

18. A device in accord with Claim 14, further comprising a heat transmission part having a rotationally symmetrical profiled or unprofiled shape.

19. A device in accord with Claim 14, wherein the heaters comprise a heating surface having a ratio to a surface of a monocrystal to be produced to provide a

temperature that is essentially homogeneous over a radial cross-section of the monocrystal and a temperature gradient between the floor heater and the cover heater that is essentially constant.

20. A device in accord with Claim 19, wherein the surface of each heater is at least 1.5 times the cross-sectional area of the monocrystal.

21. A device in accord with Claim 15, wherein the controller can lower the temperature of the floor heater continuously with reference to the cover heater.

22. A device in accord with Claim 14, the device further comprising a clearance between the floor heater and the cover heater, the clearance being greater than the length of a monocrystal to be produced.

23. A device in accord with Claim 14, wherein said first insulator device comprises graphite.

24. A device in accord with Claim 14, further comprising a crucible for receiving the melt of raw material, the crucible being located between the floor heater and the cover heater.

25. A device in accord with Claim 14, wherein the furnace is cylindrical and further comprising:

a controller to control a temperature of the floor heater to be lower than a temperature of the cover heater;

an insulator device having a tapered cone body with a coaxial cylindrical hollow space that is open at the top and bottom, the insulator device being positioned in the furnace so that the tapered end is towards the floor heater;

a jacket heater for the furnace;

a crucible for receiving the melt of raw material, the crucible being located between the floor heater and the cover heater; and

a clearance between the floor heater and the cover heater, the clearance being greater than the length of a monocrystal to be produced.

26. A device in accord with Claim 25, further comprising a heat transmission part having a rotationally symmetrical profiled or unprofiled shape.

27. A device in accord with Claim 25, wherein the floor and cover heaters comprise a heating surface having a ratio to a surface of a monocrystal to be produced to provide a temperature that is essentially homogeneous over a radial cross-section of the monocrystal and a temperature gradient between the floor heater and the cover heater that is essentially constant.

28. A device in accord with Claim 27, wherein the surface of each of the floor and cover heaters is at least 1.5 times the cross-sectional area of the monocrystal.

29. A device in accord with Claim 25, wherein the controller can lower the temperature of the floor heater continuously with reference to the cover heater.

30. A device in accord with Claim 25, wherein said first insulator device comprises graphite.

31. A method for producing a monocrystal of a III-V composite semiconductor material, said method comprising growing the monocrystal in a device according to any one of Claims 14 to 30.

32. A method for producing a monocrystal of gallium arsenide, said method comprising growing the monocrystal in a device according to any one of Claims 14 to 30.